



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/575,783

05/12/2006

Takashi Uchida

2006\_0510A

3571

513 7590 05/28/2008

WENDEROTH, LIND & PONACK, L.L.P.

2033 K STREET N. W.

SUITE 800

WASHINGTON, DC 20006-1021

EXAMINER

LACLAIR, DARCY D

ART UNIT

PAPER NUMBER

4171

MAIL DATE

DELIVERY MODE

05/28/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/575,783	<b>Applicant(s)</b> UCHIDA ET AL.	
	<b>Examiner</b> Darcy D. LaClair	<b>Art Unit</b> 4171	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>4/14/06</u> . | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### *Specification*

1. The disclosure is objected to because of the following informalities: In the second line of the abstract, the specification reads "aurethane." In paragraph 14, the specification reads "abase film." Please add spaces.

Appropriate correction is required.

### *Double Patenting*

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claims 1-4 and 7 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-7 of U.S. Patent No. 6,979,493.

Art Unit: 4171

Although the conflicting claims are not identical, they are not patentably distinct from each other because they both teach an aqueous dispersion comprising a gas barrier polyurethane resin with a plurality (25%-60% or 30% to 42%.9) of urethane and urea groups, an amine, and an inorganic water-swellaable layered compound. The urethane is generated from an aromatic, araliphatic, or alicyclic diisocyanate, which includes xylene or hydrogenated xylene diisocyanate in both documents, and a C<sub>2-8</sub> diol, and a polyamine or a diamine (a species of polyamine). The urethane resin of the patent is to have a number average molecular weight of 800 to 1,000,000, This is an extremely broad range which would be met by many of the urethanes described by the requirements of the claims of the instant application. Further, it would have been obvious to use materials within this range as it encompasses most workable ranges.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-14 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Uchida et al. (US 6,569,533, also the earlier published family member EP 1 081 170 A2)

6. Claim 1 requires an aqueous resin composition with gas barrier properties with (i) a polyurethane resin having 25% to 60% urethane and urea groups, and having an acid group, (ii) a swelling inorganic layered compound, and (iii) a polyamine compound.

Art Unit: 4171

Uchida teaches a polyurethane resin having a total concentration of the urethane group and the urea group of not less than 15% by weight, (col 2 line 50-51) a layered inorganic compound, (col 3 line 1-2) and a diamine component. (col 3 line 21) Further, it is indicated that the total concentration of the urethane group and the urea group is preferably about 20% by weight, and more preferably about 35% to 60% by weight. (col 7 line 19-27) This completely covers applicants stated range, and indicates that the preferable range directly overlaps applicant's range. Uchida teaches that the polyurethane resin may be in the form of an aqueous solution or an aqueous dispersion. (col 5 line 35)

7. Claim 2 requires a polyurethane resin obtained by a reaction of (A) a polyisocyanate containing at least one of aromatic, araliphatic, or alicyclic polyisocyanate and (B) a polyhydroxyalkanoic acid. The resin is then neutralized with a neutralizing agent.

a. Uchida teaches that the polyurethane resin can be obtained by a urethanizing reaction of a diisocyanate and a diol component. (col 3 line 18-21) For the diisocyanate component, aromatic diisocyanates, araliphatic diisocyanates, alicyclic diisocyanates, and aliphatic diisocyanates are presented. (col 3, line 23-25 and col 3-4 inclusive)

b. For the diol components, Uchida teaches that polyesterdiols (e.g. reaction products of the low-molecular diols and dicarboxylic acids) may be used. (col 4 line 25-27) Uchida further teaches that in order to prepare an aqueous dispersion, a hydrophilic group may be introduced to the prepolymer used to

Art Unit: 4171

generate the urethane through a reaction of an isocyanate with a hydrophilic compound as at least a part of the diol or diamine component. (col 5 line 60-67)

As the hydrophilic compound, dihydroxycarboxylic acids, dihydroxy C4-C10 polycarboxylic acids, and dihydroxy aromatic carboxylic acids may be used. (col 6 line 15-30) These carboxylic acids meet the limitation (B) requiring polyhydroxyalkanoic acids.

c. Uchida teaches that after the acidic group is introduced, it should be neutralized prior to the next step. (col 6 line 12-13) Neutralizers are then enumerated. (col 6 line 53-67)

8. Claim 3 requires a polyurethane resin obtained by a reaction of (A) a polyisocyanate compound from claim 2 (A) in a proportion of not less than 30% weight in the polyisocyanate compound and (B) a polyhydroxyalkanecarboxylic acid and at least one of (C) a polyol with 2 to 8 carbon atoms in a proportion of not less than 90% by weight in the polyol compound and (D) at least one chain extension agent selected from the group diamine, hydrazine, and hydrazine derivative.

d. Adding to the arguments enumerated for claim 2 above, it is noted that Uchida indicates that the especially preferred diisocyanates are aromatic, alicyclic, and araliphatic in order to achieve the optimal gas barrier properties. This suggests that a majority of the isocyanates would be of this type. In the examples, 1,3-xylene diisocyanate (PE1), 4,4'-diphenylmethane diisocyanate (PE2), 2,4-tolylene diisocyanate (PE3, PE4), 2,4-tolylene diisocyanate and 2,5-tolylene diisocyanate (80/20) (PE5) are used as the only isocyanates in the

Art Unit: 4171

compositions, making the compositions contain 100% aromatic, araliphatic, or alicyclic isocyanates, with respect to the total isocyanate present.

e. This meets the limitation that not less than 30% of the isocyanate be ring bearing. With respect to the limitation (C) that the polyol contain greater than 90% compounds with 2 to 8 carbon atoms, Uchida indicates that a low molecular diol such as a C<sub>2</sub>-C<sub>8</sub> diol (ethylene glycol, propylene glycol, butanediol, pentanediol, hexanediol, heptanediol, octanediol, diethylene glycol, triethylene glycol, tetraethylene glycol, dipropylene glycol) is usually used. This suggests that these C<sub>2</sub>-C<sub>8</sub> diols would be used for the major portion of the composition.

(col 4 line 33-42) In the examples, 1,4-butanediol (PE1), ethylene glycol (PE2), diethylene glycol (PE3), 1,6-hexanediol (PE4), and 3-methyl-1,5-pentanediol (PE5) were employed as the only diols. This means that 100% of the diols in these compositions are diols with 2 to 8 carbon atoms, meeting applicant's limitation (C) on polyols.

f. With respect to chain extenders (D), Uchida indicates that a chain diamine chain extending agent may be used, and provides as examples hydrazine, aliphatic diamines, aromatic amines, and alicyclic diamines, with hydrazine and several diamines preferred. (col 4 line 48-col 5 line 6)

9. With regard to claim 4, which requires that component (A) contains at least one member from the group of xylene diisocyanate and a hydrogenated xylene diisocyanate, Uchida teaches that araliphatic diisocyanates are exemplified by 1,3 or 1,4-xylene diisocyanate and mixtures of the two (XDI). (col 3 line 33-36) 1,3-xylene

Art Unit: 4171

diisocyanate is utilized in production examples 1 and 7, and hydrogenated xylene diisocyanate (XDI) is utilized in production examples 8, 9 and 11.

10. Claim 5 requires that (ii) is water-swelling mica and a montmorillonite. Uchida teaches that layered inorganic compounds are effective for improving the gas barrier properties of the polyurethane resin, and that swellable micas are usable, and that montmorillonite and smectite-series clay minerals are preferred. (col 9, line 55-65)

11. Claim 6 requires that the acid value of the polyurethane resin (1) is 5 to 100 mgKOH/g, the amine value of the polyamine compound (iii) is 10 to 1900 mgKOH/g, and the proportion of the acid group of (i) to (iii) is 10/1 to 1/5. Uchida teaches that the proportion of the hydrophilic compound (which contains the carboxylic acid component, see 5b) can be in the range of 1 to 100 mol%, 5 to 70 mol % or 10 to 40 mol % relative to the amount of the diol or diamine. (col 6 line 48-52) This extends beyond both sides of applicant's range of 10/1 to 1/5. Uchida fails to specifically teach an acid or amine value for the constituents presented. It is the examiner's opinion, however, that the teachings of Uchida would inherently meet the limitations of the instant application with respect to acid value and amine value. The basis for this inherency is that the compounds and compositions presented by Uchida almost identically mirror the compounds and compositions of the instant application. Uchida directly meets or exceeds the requirements of each and every claim presented in the instant application. See MPEP 2112.01 "Products of identical chemical composition can not have mutually exclusive properties." A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties



Art Unit: 4171

applicant discloses and/or claims are necessarily present. *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990) Additionally, several of the production examples from Uchida (1, 7-9, 11) are highly similar to the production examples (1-5) in that they both contain XDI and/or hydrogenated XDI, an alkanolic acid (often dimethylol propionic acid) and triethylamine in similar concentrations and ratios, as well as a solvent and an inorganic compound.

12. Claim 7 requires (ii) a water-swelling inorganic compound in a ratio of 1/100 to 200/100 to (i) the polyurethane resin. Uchida teaches 0.1 to 50 parts of inorganic compound to 100 parts of the polyurethane resin (or 1/100 to 50/100). (col 10 line 1-4) This covers a large portion of the very broad range indicated by applicant.

13. Claims 7 – 14 require a gas barrier laminated film comprising a base film, a layer formed on at least one surface of the base film, where the layer is formed from the aqueous resin composition of claims 1-7. Uchida teaches a gas barrier composite film composed of a base film layer and a resin layer at least comprising the polyurethane resin. (abs) Uchida further teaches that the polyurethane resin may be used as a single-layered filmy article or a multi-layered article constructed of a base and layer(s) formed thereon. (col 10 line 20-26) Because the limitations of each of claims 1-7 was fully met by Uchida, any of these compositions could be used the a film coating process described by Uchida.

***Conclusion***

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

15. Yoshida et al. (US 6,395,209) This disclosure teaches a deposited plastic film comprising a coating layer formed on at least one surface of a plastic film. The coated layer can be composed of 10 to 70% by weight of a water-compatible polyurethane-based resin, with a variety of appropriate isocyanate compounds as well as polyhydroxylalkanoic acids. The coating may have compounds with an amide or amino group. Yoshida teaches an inorganic filler, but fails to teach specifically a water-swelling compound.

16. Uchida et al. (JP 2001-098047), already provided by applicant, discloses a gas barrier polyurethane resin which employs significantly similar components as applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Darcy D. LaClair whose telephone number is (571)270-5462. The examiner can normally be reached on Monday-Thursday 7:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on 571-272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 4171

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. Lawrence Tarazano/  
Supervisory Patent Examiner, Art Unit 4171

Darcy D. LaClair  
Examiner  
Art Unit 4171

/DDL/